



Nortel BCM400 Release 3.6 using T1 NI2 to Cisco Unified Communications Manager 6.0

October 24, 2007 Revision 3

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Introduction

This is an application note for interoperability connectivity of Nortel BCM400 with Cisco Unified Communications Manager 6.0 using a Cisco 3825 MGCP Gateway configured with T1 PRI NI-2 switch-type.

The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability between the Nortel BCM400 and Cisco Unified Communications Manager (CUCM) using ISDN PRI NI-2 switch-type protocol.

Calling information is passed across the T1 PRI trunk using the FACILITY Information Element within the ISDN SETUP message.

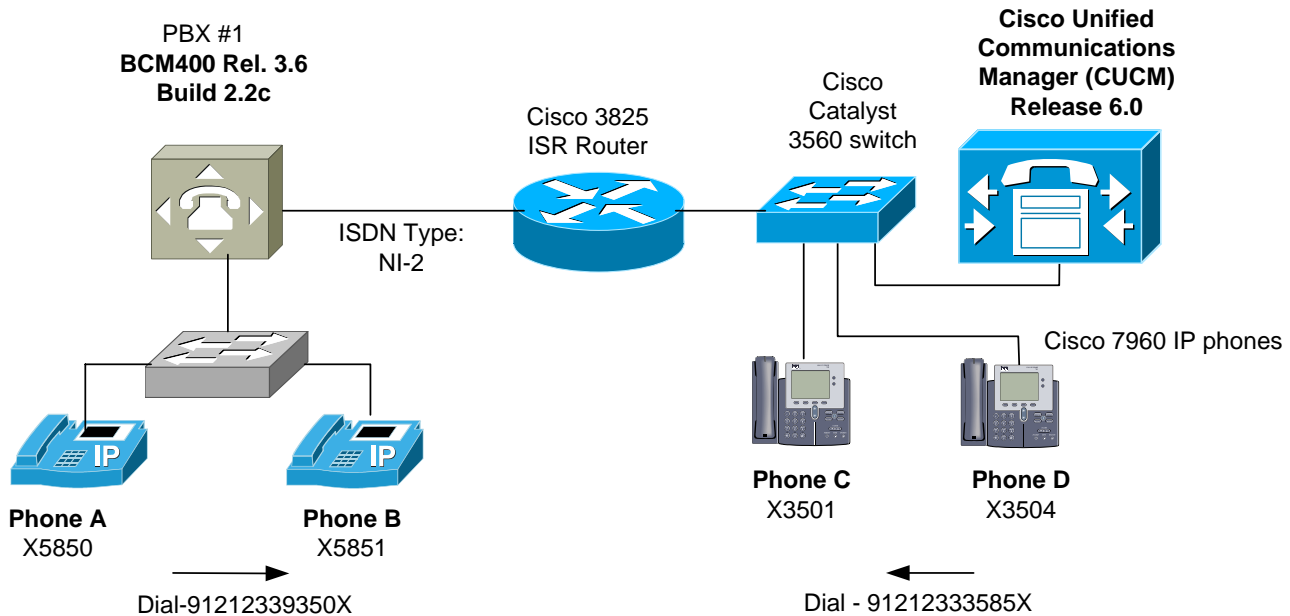
For this application note, Cisco Unified Communications Manager is configured as ISDN network-side signaling and Nortel BCM400 as ISDN user-side signaling for PRI NI-2 switch-type protocol.

This Application Note uses the 3825 T1 voice gateway. However, other Cisco [IOS](#) voice gateways are also viable options to use since Cisco Unified Communications Manager ISDN PRI via MGCP implementation does not depend on the physical interface.

Network Topology

Figure 1. Network Topology or Test Setup

Basic Call Setup End-to-End Configuration



Limitations

The following section lists known limitations, caveats, or integration issues.

The CUCM supports both the DISPLAY IE and FACILITY IE methods to deliver calling name information across the T1 PRI trunk. On the other hand, the Nortel BCM400 only supports the Facility IE method within the ISDN SETUP message to pass the calling name information across T1 PRI trunk. Therefore, to ensure the calling name information is displayed on both sides, check **Send Calling Name in Facility IE** box and uncheck the **Display IE Delivery** box in the CUCM gateway configuration.

Both CUCM and BCM400 do not send Alerting name or Connected Name information when using NI-2 switch-type.

Nortel does not support ISDN Overlapping Sending/Receiving feature for ISDN PRI NI-2 switch-type protocol

System Components

Hardware Requirements

- Cisco Unified Communications Manager MCS server
- Cisco 3825 ISR with VWIC-2MFT-T1
- Cisco 7960 IP phones
- Nortel BCM400 and Nortel's i2004 and i2002 IP phones

Software Requirements

The following software is required:



Cisco Unified Communications Manager Release 6.0

Nortel BCM400 Software Release 3.6 (Build 2.2c)

Cisco IOS Software for Cisco 3825 ISR Router: c3825-ipvoice-mz.dz06790

Features

Features Supported

CLIP-Calling Line (Number) Identification Presentation

CLIR-Calling Line (Number) Identification Restriction

CNIP-Calling Name Identification Presentation

CNIR-Calling Name Identification Restriction

Features Not Supported

Alerting Name

COLP-Connected Line (Number) Identification Presentation

COLR- Connected Line (Number) Identification Restriction

CONP-Connected Name Identification Presentation

CONR-Connected Name Identification Presentation

MWI- Message Waiting Indication (lamp ON, lamp OFF) across the T1 PRI NI-2 Trunk



Media Bay Module 1 (Switch-Type and D-channel Parameters)

Group Edit Configuration Performance Fault Report Tools Logoff View Help

[10.10.62.129] Comprehensive

Add Delete Del All

BCM (10.10.62.129)

- System
 - Licensing
 - Identification
 - Security
- Resources
 - LAN
 - LAN1
 - LAN2
 - WAN
 - Media Services Card
 - MSC Configuration
 - DTMF Configuration
 - Media Bay Modules
 - Bus 01
 - Bus 02
 - Bus 03
 - Bus 04
 - Bus 05
 - Bus 06
 - Modules on bus
 - Module 1
 - Call-by-call service selection
 - Foreign Exchange (FX)
 - Inwats (800)
 - T1 Parameters
 - Provision lines

To enable delivery of Calling Name



Medial Bay Module T1 Parameters

The screenshot displays the Cisco configuration interface for a BCM (10.10.62.129) device. The left pane shows a hierarchical tree structure under 'Resources' > 'Media Bay Modules' > 'Bus 06' > 'Module 1' > 'T1 Parameters'. The right pane shows the configuration for 'Bus 06-Module 1-T1 Parameters' with the following settings:

Parameter	Value
CO fail	TIA-547A
Interface levels	ISDN
Framing	ESF
Internal CSU	On
CSU line build	0 dB
Line coding	B8ZS

At the bottom of the interface, a status bar indicates 'Ready ...'.



T1 Trunk Provisioned Lines

The screenshot shows a Cisco configuration window for a T1 trunk. The window title is "[10.10.62.129] Comprehensive". The menu bar includes "Group", "Edit", "Configuration", "Performance", "Fault", "Report", "Tools", "Logoff", "View", and "Help". Below the menu bar, there are three buttons: "Add", "Delete", and "Del All". The main area is a tree view showing the configuration hierarchy:

- trunks (000)
 - T1 Parameters
 - Provision lines
 - Line 091
 - Line 092
 - Line 093
 - Line 094
 - Line 095
 - Line 096
 - Line 097
 - Line 098
 - Line 099
 - Line 100
 - Line 101
 - Line 102
 - Line 103
 - Line 104
 - Line 105
 - Line 106
 - Line 107
 - Line 108
 - Line 109
 - Line 110
 - Line 111
 - Line 112
 - Line 113
 - Ports on bus
 - Port 0601

The status bar at the bottom of the window displays "Ready ...".



Destination Access Code 91

Group Edit Configuration Performance Fault Report Tools Logoff View Help

[10.10.62.129]
Comprehensive

Add Delete Del All

- 50
- 580
- 581
- 582A
- 583A
- 586
- 587
- 588
- 589
- 59
- 91**
 - Schedules
 - Normal
 - Routing
 - Evening
 - Lunch
 - Sched 4
 - Sched 5
 - Sched 6
- 92
 - Schedules
 - Normal
 - Routing
 - Evening
 - Lunch
 - Sched 4
 - Sched 5

91

91

Destination code (Read-Only Field)

Ready ...



Destination Code 91 Normal Route

Group Edit Configuration Performance Fault Report Tools Logoff View Help

[10.10.62.129]
Comprehensive
Add Delete Del All

- Route 682
- Route 683
- Route 686
- Route 687
- Route 688
- Route 689
- Route 690
- Destination codes
 - 50
 - 580
 - 581
 - 582A
 - 583A
 - 586
 - 587
 - 588
 - 589
 - 59
 - 91
- Schedules
 - Normal
 - Routing
 - Eventing
 - Lunch
 - Sched 4
 - Sched 5
 - Sched 6

91-Normal

91-Normal

Use route Route 000

Absorbed length All

Ready ...



Route 000 Configuration

Group Edit Configuration Performance Fault Report Tools Logoff View Help

[10.10.62.129]
Comprehensive

Add Delete Del All

- All system DNSs
- All system B2s
- DN Registration
- Lines
 - VoIP lines
 - Physical lines
 - Target lines
 - All lines
- Restriction filters
- Call routing
- Routes
 - Route 000**
 - Route 001
 - Route 002
 - Route 500
 - Route 580
 - Route 581
 - Route 582
 - Route 583
 - Route 586
 - Route 587
 - Route 588
 - Route 589
 - Route 590
 - Route 600
 - Route 680
 - Route 682

Route 000

Route 000

External # (Read-Only Field)

Use pool

Ready ...



Line Pool A

Group Edit Configuration Performance Fault Report Tools Logoff View Help

[10.10.62.129]
Comprehensive
Add Delete Del All

- Private network
- Public network
 - Public DN lengths
 - Prefix Default
 - Prefix 0
 - Prefix 00
 - Prefix 01
 - Prefix 011
 - Prefix 1
 - Prefix 411
 - Prefix 911
 - Access codes
 - Line pool codes
 - Pool A**
 - Pool B
 - Pool C
 - Pool D
 - Pool E
 - Pool F
 - Pool G
 - Pool H
 - Pool I
 - Pool J
 - Pool K
 - Pool L
 - Pool M
 - Pool N

Pool A
Pool A
Access code

Ready ...



Configuring Cisco Unified Communications Manager 6.0

Software Release/Version

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation Cisco Unified CM Administration

CCMAdministrator | About | Logout

System ▾ Call Routing ▾ Media Resources ▾ Voice Mail ▾ Device ▾ Application ▾ User Management ▾ Bulk Administration ▾ Help ▾

Cisco Unified CM Administration
System version: 6.0.1.1000-37

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If you require further assistance please contact us by sending email to export@cisco.com.



T1 ISDN PRI – NI-2 Gateway Configuration

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Gateway Configuration Related Links:

Gateway Details

Product	Cisco 3825
Gateway	PBX_A.pbxlab.org
Protocol	MGCP
Domain Name*	<input type="text" value="PBX_A.pbxlab.org"/>
Description	<input type="text" value="PBX_A.pbxlab.org"/>
Cisco Unified Communications Manager Group*	<input type="text" value="Default"/>

Configured Slots, VICs and Endpoints

Module in Slot 0	<input type="text" value="NM-4VWIC-MBRD"/>		
Subunit 0	<input type="text" value="VWIC-2MFT-E1"/>	0/0/ 0	0/0/ 1
Subunit 1	<input type="text" value="< None >"/>		
Subunit 2	<input type="text" value="< None >"/>		
Subunit 3	<input type="text" value="< None >"/>		
Module in Slot 1	<input type="text" value="NM-HDV"/>		
Subunit 0	<input type="text" value="VWIC-2MFT-T1"/>	1/0/ 0	1/0/ 1
Module in Slot 2	<input type="text" value="< None >"/>		

Product Specific Configuration Layout

Global ISDN Switch Type	<input type="text" value="4ESS"/>
Switchback Timing*	<input type="text" value="Graceful"/>
Switchback uptime-delay (min)	<input type="text" value="10"/>
Switchback schedule (hh:mm)	<input type="text" value="12:00"/>
Type Of DTMF Relay*	<input type="text" value="Current GW Config"/>



Status
Status: Ready

Device Information

Product	Cisco MGCP T1 Port
Gateway	PBX_A.pbxlab.org
Device Protocol	Digital Access PRI
Registration	Registered with Cisco Unified Communications Manager CM-Aries
IP Address	172.20.66.101
End-Point Name *	S1/SU0/DS1-0@PBX_A.pbxlab.org
Description	<input type="text" value="TO BCM400"/>
Device Pool*	<input type="text" value="Default"/>
Common Device Configuration	<input type="text" value="< None >"/>
Call Classification*	<input type="text" value="Use System Default"/>
NetworkLocale	<input type="text" value="United States"/>
Packet Capture Mode*	<input type="text" value="None"/>
Packet Capture Duration	<input type="text" value="0"/>
Media Resource Group List	<input type="text" value="Aries_MRGL"/>
Location*	<input type="text" value="Hub_None"/>
AAR Group	<input type="text" value="< None >"/>
Load Information	<input type="text"/>

Transmit UTF-8 for Calling Party Name
 V150 (subset)

Multilevel Precedence and Preemption (MLPP) Information

MLPP Domain	<input type="text" value="< None >"/>
MLPP Indication	<input type="text" value="Off"/>



Gateway Configuration

MLPP Indication
MLPP Preemption

Interface Information

PRI Protocol Type*
Protocol Side*
Channel Selection Order*
Channel IE Type*
PCM Type*
Delay for first restart (1/8 sec ticks)*
Delay between restarts (1/8 sec ticks)*
 Inhibit restarts at PRI initialization
 Enable status poll
 Unattended Port

Call Routing Information - Inbound Calls

Significant Digits*
Calling Search Space
AAR Calling Search Space
Prefix DN

Call Routing Information - Outbound Calls

Calling Party Presentation*
Calling Party Selection*
Called party IE number type unknown*
Calling party IE number type unknown*



Call Routing Information - Outbound Calls

Calling Party Presentation*	<input type="text" value="Allowed"/>
Calling Party Selection*	<input type="text" value="Originator"/>
Called party IE number type unknown*	<input type="text" value="Unknown"/>
Calling party IE number type unknown*	<input type="text" value="National"/>
Called Numbering Plan*	<input type="text" value="Unknown"/>
Calling Numbering Plan*	<input type="text" value="Unknown"/>
Number of digits to strip*	<input type="text" value="0"/>
Caller ID DN	<input type="text"/>
SMDI Base Port*	<input type="text" value="0"/>

PRI Protocol Type Specific Information

Display IE Delivery

Redirecting Number IE Delivery - Outbound

Redirecting Number IE Delivery - Inbound

Send Extra Leading Character in Display IE***

Setup non-ISDN Progress Indicator IE Enable****

MCDN Channel Number Extension Bit Set to Zero**

Send Calling Name In Facility IE

Interface Identifier Present**

Interface Identifier Value**

Connected Line ID Presentation (QSIG Inbound Call)*

UUIE Configuration

Passing Precedence Level Through UUIE

Security Access Level*

Done



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Gateway Configuration Related Links: [Back to MGCP Configuration](#)

Interface Identifier Value**

Connected Line ID Presentation (QSIG Inbound Call)*

UUIE Configuration

Passing Precedence Level Through UUIE

Security Access Level*

Product Specific Configuration Layout ?

Line Coding*	<input type="text" value="B8ZS"/>
Framing*	<input type="text" value="ESF"/>
Clock*	<input type="text" value="External"/>
Input Gain (-6..14 db)*	<input type="text" value="0"/>
Output Attenuation (-6..14 db)*	<input type="text" value="0"/>
Echo Cancellation Enable*	<input type="text" value="Enable"/>
Echo Cancellation Coverage (ms)*	<input type="text" value="64"/>

- *- indicates required item.
- **- applies to DMS-100 protocol only.
- ***- applies to DMS-100 protocol and DMS-250 protocol only.
- ****- may be required to force ringback from some PBXs.
- *****- Device reset is not required for changes to Packet Capture Mode and Packet Capture Duration.

Done



Route Pattern Configuration (to BCM400)

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Route Pattern Configuration Related Links:

Status

Status: Ready

Pattern Definition

Route Pattern*

Route Partition

Description

Numbering Plan

Route Filter

MLPP Precedence*

Gateway/Route List* [\(Edit\)](#)

Route Option

Route this pattern

Block this pattern

Call Classification*

Allow Device Override Provide Outside Dial Tone Allow Overlap Sending Urgent Priority

Require Forced Authorization Code

Authorization Level*

Require Client Matter Code

Calling Party Transformations

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask

Prefix Digits (Outgoing Calls)

Calling Line ID Presentation*

Calling Name Presentation*

Done



require external number code

Calling Party Transformations

Use Calling Party's External Phone Number Mask

Calling Party Transform Mask

Prefix Digits (Outgoing Calls)

Calling Line ID Presentation*

Calling Name Presentation*

Connected Party Transformations

Connected Line ID Presentation*

Connected Name Presentation*

Called Party Transformations

Discard Digits

Called Party Transform Mask

Prefix Digits (Outgoing Calls)

ISDN Network-Specific Facilities Information Element

Network Service Protocol

Carrier Identification Code

Network Service	Service Parameter Name	Service Parameter Value
<input type="text" value="-- Not Selected --"/>	<input type="text" value="< Not Exist >"/>	<input type="text"/>

* - indicates required item.

Done



Cisco 7960 IP Phone Configuration (3501)

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Phone Configuration Related Links:

Status
Status: Ready

Association Information	Phone Type
<p><input type="button" value="Modify Button Items"/></p> <p>1 Line [1] - 3501 (no partition)</p> <p>2 Line [2] - Add a new DN</p> <p>3 Add a new SD</p> <p>4 Add a new SD</p> <p>5 Add a new SD</p> <p>6 Add a new SD</p> <p>----- Unassigned Associated Items -----</p> <p>7 Add a new SD</p> <p>8 Add a new SURL</p> <p>9 Add a new BLF SD</p> <p>10 Add a new BLF Directed Call Park</p> <p>11 Privacy</p> <p>12 None</p>	<p>Product Type: Cisco 7960 Device Protocol: SCCP</p> <p>Device Information</p> <p>Registration: Registered with Cisco Unified Communications Manager CM-Aries</p> <p>IP Address: 172.20.66.16</p> <p>MAC Address*: <input type="text" value="00192F07EE90"/></p> <p>Description: <input type="text" value="3501 7960-SCCP"/></p> <p>Device Pool*: <input type="text" value="Default"/> View Details</p> <p>Common Device Configuration: <input type="text" value="< None >"/> View Details</p> <p>Phone Button Template*: <input type="text" value="Standard 7960 SCCP"/></p> <p>Softkey Template: <input type="text" value="Standard User with CallBack"/></p> <p>Common Phone Profile*: <input type="text" value="Standard Common Phone Profile"/></p> <p>Calling Search Space: <input type="text" value="< None >"/></p> <p>AAR Calling Search Space: <input type="text" value="< None >"/></p> <p>Media Resource Group List: <input type="text" value="Aries_MRGL"/></p> <p>User Hold MOH Audio Source: <input type="text" value="< None >"/></p> <p>Network Hold MOH Audio Source: <input type="text" value="< None >"/></p> <p>Location*: <input type="text" value="Hub_None"/></p> <p>AAR Group: <input type="text" value="< None >"/></p> <p>User Locale: <input type="text" value="< None >"/></p> <p>Network Locale: <input type="text" value="< None >"/></p>

Done



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Phone Configuration | Related Links: Back To Find/List [Go]

Save | Delete | Copy | Reset | Add New

Network Locale	< None >	
Built In Bridge*	Default	
Privacy*	Default	
Device Mobility Mode*	Default	View Current Device Mobility Settings
Owner User ID	< None >	
Phone Load Name		
<input checked="" type="checkbox"/> Retry Video Call as Audio		
<input type="checkbox"/> Ignore Presentation Indicators (internal calls only)		
<input checked="" type="checkbox"/> Allow Control of Device from CTI		
<input checked="" type="checkbox"/> Logged Into Hunt Group		
<input type="checkbox"/> Remote Device		

Protocol Specific Information

Packet Capture Mode*	None
Packet Capture Duration	0
Presence Group*	Standard Presence group
Device Security Profile*	Cisco 7960 - Standard SCCP Non-Secure Profile
SUBSCRIBE Calling Search Space	< None >
<input type="checkbox"/> Unattended Port	
<input type="checkbox"/> Require DTMF Reception	
<input checked="" type="checkbox"/> RFC2833 Disabled	

Certification Authority Proxy Function (CAPF) Information

Certificate Operation*	No Pending Operation
Authentication Mode*	By Null String
Authentication String	

Done



Save Delete Copy Reset Add New

Certification Authority Proxy Function (CAPF) Information

Certificate Operation*

Authentication Mode*

Authentication String

Key Size (Bits)*

Operation Completes By (YYYY:MM:DD:HH)

Certificate Operation Status: None
Note: Security Profile Contains Addition CAPF Settings.

Expansion Module Information

Module 1

Module 1 Load Name

Module 2

Module 2 Load Name

External Data Locations Information (Leave blank to use default)

Information

Directory

Messages

Services

Authentication Server

Proxy Server

Idle

Idle Timer (seconds)

Done



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Phone Configuration Related Links:

Extension Information

Enable Extension Mobility

Log Out Profile:

Log in Time:

Log out Time:

MLPP Information

MLPP Domain:

MLPP Indication*:

MLPP Preemption*:

Do Not Disturb

Do Not Disturb

DND Option*:

DND Incoming Call Alert:

Product Specific Configuration Layout

Disable Speakerphone

Disable Speakerphone and Headset

PC Port *:

Settings Access*:

Gratuitous ARP*:

PC Voice VLAN Access*:

Video Capabilities*:

Auto Line Select*:

Web Access*:

Done



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Phone Configuration Related Links:

MLPP Indication*

MLPP Preemption*

Do Not Disturb

Do Not Disturb

DND Option*

DND Incoming Call Alert

Product Specific Configuration Layout ?

Disable Speakerphone

Disable Speakerphone and Headset

PC Port*

Settings Access*

Gratuitous ARP*

PC Voice VLAN Access*

Video Capabilities*

Auto Line Select*

Web Access*

i *- indicates required item.

i **- Device reset is not required for changes to Packet Capture Mode and Packet Capture Duration.

i ***Note: Security Profile Contains Addition CAPF Settings.

Done



DN 3501 Line Configuration

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Directory Number Configuration Related Links:

Status

Status: Ready

Directory Number Information

Directory Number*

Route Partition

Description

Alerting Name

ASCII Alerting Name

Allow Control of Device from CTI

Associated Devices

▼ ^

Dissociate Devices

Directory Number Settings

Voice Mail Profile (Choose <None> to use system default)

Calling Search Space

Presence Group*

User Hold MOH Audio Source

Network Hold MOH Audio Source

Auto Answer*

Done



AAR Settings

	Voice Mail	AAR Destination Mask	AAR Group
AAR	<input type="checkbox"/> or	<input type="text"/>	< None >
<input checked="" type="checkbox"/> Retain this destination in the call forwarding history			

Call Forward and Call Pickup Settings

	Voice Mail	Destination	Calling Search Space
Calling Search Space Activation Policy			Use System Default
Forward All	<input type="checkbox"/> or	<input type="text"/>	< None >
Secondary Calling Search Space for Forward All			< None >
Forward Busy Internal	<input type="checkbox"/> or	3504	< None >
Forward Busy External	<input type="checkbox"/> or	3504	< None >
Forward No Answer Internal	<input type="checkbox"/> or	3504	< None >
Forward No Answer External	<input type="checkbox"/> or	3504	< None >
Forward No Coverage Internal	<input type="checkbox"/> or	<input type="text"/>	< None >
Forward No Coverage External	<input type="checkbox"/> or	<input type="text"/>	< None >
Forward on CTI Failure	<input type="checkbox"/> or	<input type="text"/>	< None >
Forward Unregistered Internal	<input type="checkbox"/> or	3504	< None >
Forward Unregistered External	<input type="checkbox"/> or	3504	< None >
No Answer Ring Duration (seconds)		<input type="text"/>	
Call Pickup Group			< None >

MLPP Alternate Party Settings

Target (Destination)

<https://172.25.67.151:8443/ccmadmin/showHome.do>



Save Delete Reset Add New

MLPP Alternate Party Settings

Target (Destination)

MLPP Calling Search Space

MLPP No Answer Ring Duration (seconds)

Line Settings for All Devices

Hold Reversion Ring Duration (seconds) Setting the Hold Reversion Ring Duration to zero will disable the feature

Hold Reversion Notification Interval (seconds) Setting the Hold Reversion Notification Interval to zero will disable the feature

Line 1 on Device SEP00192F07EE90

Display (Internal Caller ID) Display text for a line appearance is intended for displaying text such as a name instead of a directory number for internal calls. If you specify a number, the person receiving a call may not see the proper identity of the caller.

ASCII Display (Internal Caller ID)

Line Text Label

ASCII Line Text Label

External Phone Number Mask

Visual Message Waiting Indicator Policy*

Ring Setting (Phone Idle)*

Ring Setting (Phone Active) Applies to this line when any line on the phone has a call in progress.

Call Pickup Group Audio Alert Setting(Phone Idle)

Call Pickup Group Audio Alert Setting(Phone)

https://172.25.67.151:8443/ccmadmin/showHome.do



Directory Number Configuration

Related Links: Configure Device (SEP00192F07EE90) GO

Save Delete Reset Add New

Ring Setting (Phone Active)	Use System Default	Applies to this line when any line on the phone has a call in progress.
Call Pickup Group Audio Alert Setting(Phone Idle)	Use System Default	
Call Pickup Group Audio Alert Setting(Phone Active)	Use System Default	
Monitoring Calling Search Space	< None >	

Multiple Call/Call Waiting Settings on Device SEP00192F07EE90

Note: The range to select the Max Number of calls is: 1-200

Maximum Number of Calls*

Busy Trigger* (Less than or equal to Max. Calls)

Forwarded Call Information Display on Device SEP00192F07EE90

- Caller Name
- Caller Number
- Redirected Number
- Dialed Number

Users Associated with Line

Associate End Users

Save Delete Reset Add New

- *- indicates required item.
- ** - Changes to Line or Directory Number settings require restart.

Done



Configuring the Cisco 3825

PBX_A#sh run

```
Building configuration...

Current configuration : 3493 bytes
!
! Last configuration change at 16:23:52 PST Mon Sep 17 2007
! NVRAM config last updated at 16:24:08 PST Mon Sep 17 2007
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname PBX_A
!
boot-start-marker
boot system flash:c3825-ipvoice-mz.dz06790
boot system flash:c3825-ipvoice-mz.124-3a.bin
boot-end-marker
!
card type t1 1 0
logging buffered 1000000 debugging
enable secret 5 $1$yxlm$dISbwKK6d8UvEDxhJ3Tr6l
!
no aaa new-model
clock timezone PST -7
no network-clock-participate slot 1
network-clock-participate wic 0
voice-card 0
  no dspfarm
!
voice-card 1
  dspfarm
!
ip cef
!
!
!
!
ip domain name pbxlab.org
ip name-server 172.20.2.181
ip name-server 171.70.168.183
isdn switch-type primary-4ess
!
!
!
!
!
!
!
!
!
!
!
```




```
controller E1 0/0/0
  pri-group timeslots 1-30
!
controller E1 0/0/1
  pri-group timeslots 1-31 service mgcp
!
controller T1 1/0/0
  framing esf
  linecode b8zs
  pri-group timeslots 1-24 service mgcp
!
controller T1 1/0/1
  framing esf
  linecode b8zs
  pri-group timeslots 1-24 service mgcp
!
!
!
interface GigabitEthernet0/0
  ip address 172.20.66.101 255.255.255.0
  duplex auto
  speed auto
  media-type rj45
!
interface GigabitEthernet0/1
  no ip address
  shutdown
  duplex auto
  speed auto
  media-type rj45
!
interface Serial0/0/0:15
  no ip address
  encapsulation hdlc
  isdn switch-type primary-dms100
  isdn protocol-emulate network
  isdn incoming-voice voice
  isdn contiguous-bchan
  isdn bchan-number-order descending
  isdn channel-id invert extend-bit
  no cdp enable
!
interface Serial0/0/1:15
  no ip address
  encapsulation hdlc
  isdn switch-type primary-qsig
  isdn protocol-emulate network
  isdn incoming-voice voice
  isdn T310 120000
  isdn bind-13 ccm-manager
  no cdp enable
!
interface Serial1/0/0:23
  no ip address
  encapsulation hdlc
  isdn switch-type primary-ni
  isdn protocol-emulate network
  isdn incoming-voice voice
  isdn bind-13 ccm-manager
  no cdp enable
```



```
!  
interface Serial1/0/1:23  
  no ip address  
  encapsulation hdlc  
  isdn switch-type primary-qsig  
  isdn protocol-emulate network  
  isdn incoming-voice voice  
  isdn T310 120000  
  isdn bind-13 ccm-manager  
  no cdp enable  
!  
ip route 0.0.0.0 0.0.0.0 172.20.66.1  
!  
ip http server  
!  
!  
!  
control-plane  
!  
!  
!  
voice-port 0/0/0:15  
  compand-type u-law  
!  
voice-port 0/1/0  
!  
voice-port 0/1/1  
!  
voice-port 0/0/1:15  
!  
voice-port 0/2/0  
!  
voice-port 0/2/1  
!  
voice-port 1/0/0:23  
!  
voice-port 1/0/1:23  
!  
ccm-manager mgcp  
ccm-manager music-on-hold  
ccm-manager config server 172.20.66.254  
ccm-manager config  
!  
mgcp  
mgcp call-agent 172.20.66.254 2427 service-type mgcp version 0.1  
mgcp dtmf-relay voip codec all mode out-of-band  
mgcp rtp unreachable timeout 1000 action notify  
mgcp modem passthrough voip mode nse  
mgcp package-capability rtp-package  
no mgcp package-capability res-package  
mgcp package-capability sst-package  
no mgcp package-capability fxr-package  
mgcp package-capability pre-package  
no mgcp timer receive-rtcp  
mgcp sdp simple  
mgcp fax t38 inhibit  
mgcp rtp payload-type g726r16 static  
mgcp bind control source-interface GigabitEthernet0/0  
mgcp bind media source-interface GigabitEthernet0/0
```



```
!  
mgcp profile default  
!  
!  
!  
!  
line con 0  
  stopbits 1  
line aux 0  
  stopbits 1  
line vty 0 4  
  session-timeout 120  
  exec-timeout 0 0  
  password cisco  
  login  
line vty 5 10  
  session-timeout 120  
  exec-timeout 0 0  
  password cisco  
  login  
!  
scheduler allocate 20000 1000  
ntp clock-period 17178820  
ntp server 171.68.10.80  
ntp server 171.68.10.150  
!  
end
```

```
PBX_A#  
PBX_A# sh mgcp  
MGCP Admin State ACTIVE, Oper State ACTIVE - Cause Code NONE  
MGCP call-agent: 172.20.66.254 2427 Initial protocol service is MGCP 0.1  
MGCP validate call-agent source-ipaddr DISABLED  
MGCP validate domain name DISABLED  
MGCP block-newcalls DISABLED  
MGCP send SGCP RSIP: forced/restart/graceful/disconnected DISABLED  
MGCP quarantine mode discard/step  
MGCP quarantine of persistent events is ENABLED  
MGCP dtmf-relay voip codec all mode out-of-band  
MGCP dtmf-relay for voAAL2 is SDP controlled  
MGCP voip modem passthrough mode: NSE, codec: g711ulaw, redundancy: DISABLED,  
MGCP voaal2 modem passthrough disabled  
MGCP voip modem relay: Disabled.  
MGCP T.38 Named Signalling Event (NSE) response timer: 200  
MGCP Network (IP/AAL2) Continuity Test timer: 200  
MGCP 'RTP stream loss' timer disabled  
MGCP request timeout 500  
MGCP maximum exponential request timeout 4000  
MGCP rtp unreachable timeout 1000 action notify  
MGCP gateway port: 2427, MGCP maximum waiting delay 3000  
MGCP restart delay 0, MGCP vad DISABLED  
MGCP rtrcac DISABLED  
MGCP system resource check DISABLED  
MGCP xpc-codec: DISABLED, MGCP persistent hookflash: DISABLED  
MGCP persistent offhook: ENABLED, MGCP persistent onhook: DISABLED  
MGCP piggyback msg ENABLED, MGCP endpoint offset DISABLED  
MGCP simple-sdp ENABLED  
MGCP undotted-notation DISABLED  
MGCP codec type g711ulaw, MGCP packetization period 20  
MGCP JB threshold lwm 30, MGCP JB threshold hwm 150
```



```
MGCP LAT threshold lwm 150, MGCP LAT threshold hwm 300
MGCP PL threshold lwm 1000, MGCP PL threshold hwm 10000
MGCP CL threshold lwm 1000, MGCP CL threshold hwm 10000
MGCP playout mode is adaptive 60, 40, 200 in msec
MGCP Fax Playout Buffer is 300 in msec
MGCP media (RTP) dscp: ef, MGCP signaling dscp: af31
MGCP default package: trunk-package
MGCP supported packages: gm-package dtmf-package trunk-package line-package
                        hs-package rtp-package atm-package ms-package dt-package
                        mo-package mt-package sst-package pre-package
MGCP Digit Map matching order: shortest match
SGCP Digit Map matching order: always left-to-right
MGCP VoAAL2 ignore-lco-codec DISABLED
MGCP T.38 Max Fax Rate is DEFAULT
MGCP T.38 Fax is DISABLED
MGCP T.38 Fax ECM is ENABLED
MGCP T.38 Fax NSF Override is DISABLED
MGCP T.38 Fax Low Speed Redundancy: 0
MGCP T.38 Fax High Speed Redundancy: 0
MGCP control bound to interface GigabitEthernet0/0
MGCP media bound to interface GigabitEthernet0/0
MGCP Upspeed payload type for G711ulaw: 0, G711alaw: 8
MGCP Static payload type for G.726-16K codec
MGCP Dynamic payload type for G.726-24K codec
MGCP Dynamic payload type for G.Clear codec
MGCP Dynamic payload type for NSE is 100
MGCP Dynamic payload type for NTE is 99
MGCP Guaranteed scheduler time is disabled
```

```
PBX_A#sh ccm-manager
```

```
MGCP Domain Name: PBX_A.pbxlab.org
```

Priority	Status	Host
Primary	Registered	172.20.66.254
First Backup	None	
Second Backup	None	

```
Current active Call Manager: 172.20.66.254
Backhaul/Redundant link port: 2428
Failover Interval: 30 seconds
Keepalive Interval: 15 seconds
Last keepalive sent: 14:49:57 PST Oct 2 2007 (elapsed time: 00:00:06)
Last MGCP traffic time: 14:49:57 PST Oct 2 2007 (elapsed time: 00:00:06)
Last failover time: None
Last switchback time: None
Switchback mode: Graceful
MGCP fallback mode: Not Selected
Last MGCP fallback start time: None
Last MGCP fallback end time: None
MGCP Download Tones: Disabled
```

```
Backhaul Link info:
```

```
Link Protocol: TCP
Remote Port Number: 2428
Remote IP Address: 172.20.66.254
Current Link State: OPEN
Statistics:
  Packets recvd: 445
  Recv failures: 0
  Packets xmitted: 504
```



```
Xmit failures:      0
PRI Ports being backhauled:
  Slot 1, VIC 0, port 1
  Slot 1, VIC 0, port 0
  Slot 0, VIC 0, port 1
Configuration Auto-Download Information
=====
Current version-id: 1189633638-8943a86f-afe1-4283-bf80-f5ed762e07ba
Last config-downloaded:00:00:00
Current state: Waiting for commands
Configuration Download statistics:
  Download Attempted      : 42
  Download Successful     : 42
  Download Failed        : 0
  Configuration Attempted : 38
  Configuration Successful : 38
  Configuration Failed(Parsing): 0
  Configuration Failed(config) : 0
Last config download command: New Registration
Configuration Error History:
voice-port 0/0/1:15echo-cancel coverage 8

controller E1 0/0/1no pri-group timeslots 1-31

FAX mode: cisco
PBX_A#sh isdn stat serial 1/0/0:23
Global ISDN Switchtype = primary-4ess

%Q.931 is backhauled to CCM MANAGER 0x0003 on DSL 2. Layer 3 output may not apply

ISDN Serial1/0/0:23 interface
***** Network side configuration *****
  dsl 2, interface ISDN Switchtype = primary-ni
  L2 Protocol = Q.921 0x0000  L3 Protocol(s) = CCM MANAGER 0x0003
Layer 1 Status:
  ACTIVE
Layer 2 Status:
  TEI = 0, Ces = 1, SAPI = 0, State = MULTIPLE_FRAME_ESTABLISHED
Layer 3 Status:
  0 Active Layer 3 Call(s)
Active dsl 2 CCBs = 0
The Free Channel Mask: 0x807FFFFF
Number of L2 Discards = 0, L2 Session ID = 71
Total Allocated ISDN CCBs = 0
PBX_A#
```



Acronyms

Acronym	Definitions
CUCM	Cisco Unified Communications Manager
CFB	Call Forwarding on Busy
CFNR	Call Forwarding No Reply
CFU	Call Forwarding Unconditional
CLIP	Calling Line (Number) Identification Presentation
CLIR	Calling Line (Number) Identification Restriction
CNIP	Calling Name Identification Presentation
CNIR	Calling Name Identification Restriction
COLP	Connected Line (Number) Identification Presentation
COLR	Connected Line (Number) Identification Restriction
CONP	Connected Name Identification Presentation
CONR	Connected Name Identification Restriction
CT	Call Transfer
MWI	Message Waiting Indicator
PSTN	Public Switched Telephone Network



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